Does the information content of payout initiations and omissions influence firm risks?

Henk von Eije
Faculty of Economics and Business,
University of Groningen, The Netherlands*

Abhinav Goyal
University of Liverpool Management School,
University of Liverpool, United Kingdom†

Cal B. Muckley
UCD School of Business and Geary Institute,
University College Dublin, Ireland‡

Abstract

We study the influence on firm risks of NASDAQ and NYSE firm payout initiations and omissions. These pay out events can be interpreted as managerial signals of firm financial life-cycle maturation resulting in concomitant changes in firm risks. We remove confounding payout types and we match on the propensity to initiate or omit informed by determinants of pay out known to investors in advance. For payout event and matched firms, we apply the difference-in-differences method to estimate the effect of the information content of actual initiations and omissions on firm risks. We find consistent significant declines in total, aggregate systematic, and idiosyncratic firm risks after cash dividend initiations and increases after dividend omissions, but only incidentally after share repurchase initiations and omissions.

JEL Classification: G35, G32, C58
Keywords: dividends, repurchases, initiations, omissions, total risk, idiosyncratic risk, systematic firm risks, self-selection

---

*E-mail: J.H.von.Eije@rug.nl **Corresponding author:** Henk von Eije, University of Groningen, Faculty of Economics and Business, Duisenberg Building 848, PO Box 800, 9700 AV, The Netherlands. The authors would like to thank three anonymous referees, Alok Bhargava, Philip Bourke, Michael Brennan, Amedeo De Cesari, Tom Conlon, Gregory Connor, Lammertjan Dam, Kevin Denny, Tom Flavin, Gustavo Grullon, Ciaran Heavey, Halit Gonenc, Olan Henry, Kevin Maher, Gael Martin, Brendan McCabe, John McConnell, Aljar Meesters, Conall O'Sullivan, Paul Ryan, Bob Scapens, Marianne Simonsen, Peter Smid, Roberto Wessels and Wim Westerman. The usual disclaimer applies.

†E-mail: agoyal@liv.ac.uk

‡E-mail: cal.muckley@ucd.ie.

1 Introduction

Payout policy and firm risks are two major topics in the field of corporate finance, but the influence of extreme payout events (payout initiations and omissions) on firm risks has received scant attention in the literature. Notwithstanding, Brav, Graham, Harvey and Michaely (2005) report that many financial executives believe that there is a causal relation between pay outs and risk changes. The objective of this paper is to test whether changes in firm risks are indeed attributable to the new information content provided to investors in pay out initiations and omissions. We assess the risk effects of dividends and repurchases, of initiations and omissions, on total, aggregate systematic, and idiosyncratic risks. The findings in respect to the estimated risk effects are not only relevant in their own right, but also because these risk effects are very likely to influence firm values.

In line with the semi-strong form of the efficient market hypothesis (Fama, 1970) investors can have expectations, based on publicly available information, on prospective pay out events, which are reflected in price behaviour. However, as managers can have more information than investors, firms with a similar likelihood of a pay out event, from the perspective of investors, do not necessarily exhibit the same incidence of actual payout events. Payout (especially dividend) initiation and omission events, which are conducted by management, reveal new information to investors, which results in positive value effects after initiations and negative value effects after omissions (Christie, 1994, Ikenberry, Lakonishok, and Vermaelen, 1995, Charitou, Lambertides and Theodoulou, 2011 and Bonaimé, 2012). Moreover, the value effects based on the new information are smaller for initiations than for omissions (Michaely, Thaler, and Womack, 1995).

Recent financial risk related literature suggests that the value effects associated with pay outs can be due to the new information content on firm maturity signalled to investors in the pay out. A dividend initiation may indicate that a firm transits from a growth to a maturity phase, and that it has fewer growth options relative to assets in place. The new information signalled to investors results in lower systematic risks (Berk, Green and Naik, 1999), and concomitant lower discount rates and increases in firm value (Grullon, Michaely and Swaminathan, 2002 and Grullon and Michaely, 2004).

We add to the maturity hypothesis that the value effects of the information content of the payout signal can also arise from changes in firms' idiosyncratic risk. As idiosyncratic risk is indicative of growth opportunities (Hoberg and Prabhala, 2005) and cash flow risk (Bulan, Subramanian and Tanlu, 2007), it is also expected to decline in the transition from a firm's high growth to a lower growth phase. For this reason we investigate whether the information signals provided by payout initiations also influence idiosyncratic firm risk.

In principle, risk related value effects, moreover, do not only arise from signals on firm maturation after payout initiations. If a firm faces improved investment opportunities, which can be interpreted as a return to an earlier phase in its financial life-cycle, it may omit payouts if it finds it optimal to finance the new opportunity internally. Concomitantly, the firm's systematic and idiosyncratic risks may increase and its value may decline. Of course, a firm may also omit if it tries to cope with pure financial distress, and that may also signal to investors increased firm risks and a reduction in firm value.

As we wish to address the risk effects of extreme payout events comprehensively, we distinguish dividend and share repurchase payout channel events. It is likely that there are different anticipated effects on firm risks according to the payout channel involved. There are different stylized contexts in which dividend and repurchase payout policies are realized and dividends and repurchases are not perfect substitutes (Bhargava, 2010). When a firm progresses in its financial life cycle, from a transitory income to a predominantly permanent income (Jagannathan, Stephens and Weisbach, 2000), a firm commences pay out using repurchases, and with the maturation of the firm's income stream, it may decide to initiate paying dividends (Grullon, Michaely, and Swaminathan, 2002, Grullon and Michaely, 2004). In comparison to unexpected repurchase initiations, unexpected dividend initiations may thus contain a stronger signal of maturation to investors, and have larger risk effects.

We apply propensity scores to identify comparable firms (Rosenbaum and Rubin, 1983), and non-parametric local linear regression matching to facilitate difference-in-differences tests (Heckman, Ichimura and Todd, 1998 and Guo and Fraser, 2010). Contrary to the extant literature which matches on risk factors, we utilize a matching procedure for the selection of the counterfactual firms, that is based on the publicly available information in the capital market. Our counterfactual firms therefore have a comparable, *ex ante*, propensity to initiate (or omit) pay outs as the firms which actually initiate (or omit). In respect to the resulting firms, investors are unable to distinguish whether they will initiate (or omit). We compare the risk changes of firms that do initiate (or omit) to those of the firms that do not signal such additional information to the market. In addition, our methodology corrects for confounding payout channels.

The paper is organized as follows. Section 2 states the tested hypotheses and explains why we use a difference-in-differences propensity score matching (PSM) methodology. Section 3 presents information about the dataset and associative descriptive statistics. Section 4 presents the main results concerning "causal" relations between the information content of payout initiations and omissions and firm risks. Section 5 reports the conclusions.

2 Hypotheses and methodology

2.1 Hypotheses

As a result of documented managerial expectations, with respect to a negative influence of pay out on firm risks after dividend and repurchase initiations, we, first, expect that the payout initiation will reduce aggregate systematic and idiosyncratic firm risks. When a firm follows a policy of paying dividends (or repurchases), investors might interpret an omission in dividend pay out (or repurchases) as providing information concerning a less "mature" firm or concerning an increase in firm risk due to financial distress.

Value reductions arise following payout omissions and relatively small value increases follow payout initiations. In respect to dividend (and repurchase) initiations and omissions, we therefore, second, expect that there is an asymmetry in their influence on firm risks. Third, as repurchases, compared to dividends, are associated with a relatively flexible payout channel, and a less developed phase of the firm financial life-cycle, we expect smaller signals to arise on firm risks in respect to repurchase initiations (omissions) relative to dividend initiations (omissions).

2.2 Methodology

In a hypothesis testing framework, researchers may, to inform their hypotheses tests, use comprehensive econometric models (Bhargava, 2014) or try to elicit causality effects by replicating as closely as possible the experimental methods of biomedical sciences. We do the latter and conduct our hypotheses tests in non-experimental settings. We test our first set of hypotheses by using propensity score matching (PSM) in combination with difference-in-differences, while using non-parametric local linear regression techniques. In order to test our second and third sets of hypotheses, we test for the risk effect difference in the difference-in-differences of the compared payout policy changes.

2.2.1 Matching on propensity scores

The underpinning rationale in regard to the construction of our sets of matched counterfactual firms is informed by the capacity of the market to ascribe a propensity, based on observable firm characteristics (consistent with semi-strong form market efficiency), to a firm to self-select to a payout event. In order to account for the, *ex ante*, expectations of investors in the market, we match on the propensity of a firm to initiate or omit a pay out. This construction of sets of counterfactual firms differs from Grullon and Michaely (2004), Grullon, Michaely and Swaminathan (2002) and Bulan, Subramaniam and Tanlu (2007) who do not match on firm characteristics directly related to the pay out event, but rather to variables which are correlated with cross-sectional differences in expected returns.

Our matching methodology is motivated directly by the "maturity" hypothesis which suggests that due to an unobservable shock (from the capital market's perspective) to the maturity (the investment opportunity set) of the firm, the firm's management ultimately selects to initiate or omit pay out. The unobserved information on firm maturity which is initially available exclusively to firm management may thus be signalled to investors by way of a payout event. The payout event, at time period t, is, hence, an information laden link, in a chain, which reveals that otherwise unobservable shock. After the new information on firm maturity investors in the market may adjust their trading of firm equity accordingly and react less to other news (Jones, Gu and Liu, 2014), and this may hence impact firm risks.

Our propensity scores, p, of a payout event, are conditional probability estimates from logistic regression models on k firms comprising the "treated" firms (i) and the "counter-factual" firms (j)

$$p(event_{k,t} = 1) = f(X_{k,t-1}) \tag{1}$$

where X is a set of covariates observed in time period, t-1. The set of covariates is informed, in the first instance, by values of lagged total risk. As risk is a major determinant of the likelihood to initiate (and omit) pay outs (Lintner, 1956, Hoberg and Prabhala, 2008, Chay and Suh, 2009), firms that are less risky are more likely to self-select to initiate pay out. As previous risk levels are not expected to be the sole determinant of initiating (and omitting), we correct for nine other determinants of pay out and industry dummies (Brockman and Unlu, 2009, and Chay and Suh, 2009). We also include a time trend and a squared time trend in order to account for time variation in the number of initiations and omissions (Fama and French, 2001 and Julio and Ikenberry, 2004). Consistent with the maturity hypothesis, we, finally, add the duration of the pay outs to the logistic regressions of the dividend and repurchase omitting firms.

We conduct a specification test based on an orthogonality restriction between the density of the propensity scores of the treated firms and the treated and the counterfactual firms (Shaikh, Simonsen, Vytlacil and Yildiz, 2009), which tests whether the adopted propensity score matching is appropriate. The logistic regressions which determine the propensity scores and the associated diagnostic test are presented in Appendix A2.

Prior to applying the logistic regression, we use a screen, in respect to confounding pay outs, in order to be able to make inferences on the *pure* effects of payout initiations and omissions. This means that we, unlike in Grullon and Michaely (2004), Grullon, Michaely and Swaminathan (2002) and Bulan, Subramaniam and Tanlu (2007), exclude observations for both counterfactual firms and treated firms when the alternative payout channel is used by the firm during the two year period before the event until one year after the event. We, moreover, require that the treated firms do not alter their payout decision one year after the payout event. Finally, we use one-to-many matching based on local linear regressions. This matching procedure uses comparatively more information on the counterfactual firms than the one-to-one standard matching algorithms used in Grullon and Michaely (2004), Grullon, Michaely and Swaminathan (2002) and Bulan, Subramaniam and Tanlu (2007).

2.2.2 Difference-in-differences

In respect to the treated firms that actually self-select to conduct a payout event and the propensity score matched counterfactual firms, we apply difference-in-differences (DID) to firm risks. As investors are, *ex ante*, unable to distinguish between these treated and counterfactual firms, in respect to their propensities to a payout event, we compare the risk changes (Δy) of firms that do initiate (or omit) (Δy_i) to those of the firms that do not (Δy_j). If observed risk changes - between the treated and counterfactual firms - ultimately differ ($\Delta y_i - \Delta y_j \neq 0$), then we infer a relation between firm risk changes and the information content embedded in the only observed remaining difference between these sets of firms, namely the initiation (or omission) of the pay out.

While propensity score matching mitigates time varying observable bias, in the observed propensities to initiate (omit), in comparison to a pure DID approach, the use of DID mitigates biases due to unobservable time invariant firm effects. In particular, the DID approach is important if the matching in the propensity scores does not give identical initial total, aggregate systematic or idiosyncratic risk levels for firms which conduct a payout event and firms that do not (Chabé-Ferret, 2012). Such differences may occur, specifically in aggregate systematic and idiosyncratic risks, despite the comparability, from the perspective of the investors, of the likelihood of a payout event.

We require that the DID start date of the risk measures precedes the payout event by two years (t-2). The reason for conducting DID in this way is that we wish to compare dividend and repurchase risk effects, and the actual payments, and not their announcements, are the only measures by which one can estimate comparable initiation and omission effects. Repurchase announcements neither necessarily result in actual repurchases nor in the announced amounts or timing of repurchases (Bonaimé, 2012). Moreover, repurchase omissions may occur without any announcement. However, we do wish to account for any effects of announcements that may take place in the year, t-1, (before the payout event), and so we use risk measures in t-2, two years before the actual payout event as a starting point. Furthermore, actual payout events can take place early in the event year, t, but also at the end of that year. For the latter reason, in conducting DID, we end our measurements of risk effects not in the event year, but in the year after the event year, t+1. We expect that persistent risk effects of payout events, if any, will be evident in the, *ex-post*, risk measurements.

Hence, rather than rely solely on the standard matching estimator assumption of "selection on observables" we combine it with DID to "...improve the quality of non-experimental evaluation results significantly" (Blundell and Costa-Dias, 2000, p.438). Indeed, Heckman, Ichimura, Smith and Todd (1998) provide evidence that this methodology, relative to straightforward matching, is associated with lower bias.

2.2.3 The estimator and inference

The DID methodology allocates the effects of a treatment to the differences in changes between treated and counterfactual firms. Our DID non-parametric estimator (consistent with Rosenbaum and Rubin, 1983 and Blundell and Costa-Dias, 2000), δ, is defined as follows. Let Δy_i and Δy_j represent the firm risk (total, aggregate systematic or idiosyncratic risk) change between fiscal year (t-2) and fiscal year (t+1) for the treated (i) and the counterfactual (j) firms, respectively. The estimator of the average treatment effect can be expressed as

$$\delta = \frac{1}{n} \sum_{i \in P} \left(\Delta y_i - \sum_{j \in C} w(i,j) \Delta y_j \right) \tag{2}$$

where P (C) represents the common support region set of all treated (counterfactual) firms and n refers to the number of treated firms. Moreover, $w(i,j)$ refers to the local linear regression tri-cube kernel weights of the counterfactual firms (Guo and Fraser, 2010, p.260).

Inference based on the PSM DID approach relies on the construction of a set of counterfactual firms which addresses the missing observation dilemma of what would happen to the firm risks of payout event firms if they did not conduct a pay out. The estimated average treatment effect, δ, on the treated, is, of course, only an appropriate approximation if there are no unobserved or unaccounted effects that make the risk changes of the counterfactual firms different from the risk changes of the treated firms. To estimate the standard errors for this estimator, we use the bootstrap method. The DID estimator with non-parametric local linear regression matching is not only asymptotically normal but also asymptotically linear and hence bootstrapping is likely to be valid in this context (Heckman, Ichimura, and Todd, 1998, Abadie and Imbens, 2006).

3 Data description

Our dataset comprises payout initiations and omissions, from 1972 to 2012, of firms listed at the NASDAQ or the NYSE and reporting in United States dollars. We use the COMPUSTAT-CRSP linking table and select NYSE and NASDAQ firms with share codes 10 and 11. Our principal payout variables are the actual initiations (omissions) of pay outs of dividends and net repurchases. We require that dividend and repurchase observations are available, though they may be zero. We follow Fama and French (2001) and Skinner (2008) to calculate net repurchases.

To correct for survivorship bias, our dataset comprises currently active and dead firms. We remove regulated utilities (codes 4900-4999) and financial firms (codes 6000-6999), firms with no fiscal year ends and firms without permanent company numbers. After this screen, we have 10,339 firms. For these remaining firms, we download the daily returns and calculate the corresponding weekly (Wednesday) returns. The data are matched by date to the risk free rates, the Small Minus Big and the High Minus Low returns from the website of Kenneth French.[1] We calculate the sample standard deviation of the excess weekly Wednesday returns as a measure of total risk. Then, we estimate, for each firm year, Fama and French (1993) Ordinary Least Squares regressions in the 52 week period preceding a fiscal year end. We calculate the sample standard deviation of the regression residuals to estimate the firm's idiosyncratic risk. The aggregate systematic risk is calculated as the square root of the difference between the squares of total and idiosyncratic risk. As a

[1] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

result, we obtain the annual sample estimates of weekly total, aggregate systematic and idiosyncratic risks.

As a constraint to ensure stock liquidity, in each fiscal year, we require that there are not more than 5 zero weekly return observations and that there are at least 48 non-missing values for the weekly return observations. In addition, we retain observations only when the fiscal year end of the firm is more than a full year after the initial public offerering (IPO), where an IPO is identified as the first day of non-zero prices in CRSP. This screening procedure leaves 7,740 firms and up to 77,021 firm-year observations.

In panel A of Appendix A1 we present a disaggregation of total risk, TRISK, into its constituent components of aggregate systematic risk, SRISK, and residual idiosyncratic risk, IRISK. The disaggregation of systematic risk into the coefficients and the risk factors of the Fama and French (1993) model are not reported. The mean weekly total risk is 7.3%. It represents an annual risk of 52.6% ($7.3 \times \sqrt{52}$). The reported summary risk measurements show that the majority of total risk is idiosyncratic risk, 6.5%, and the mean of the aggregate systematic component, SRISK, is 3.1%. Panel A of Appendix A1 also reports the distribution of firms which adopt specific payout channels, and the risk levels associated with these payout channels. The distinction between payout channels is motivated by Renneboog and Trojanowski (2011), who distinguish three payout channels (solely repurchases, solely dividends, and both types of pay out) besides non-payment. The main observation is that firms which do not pay out or exclusively adopt the repurchases payout channel exhibit relatively large levels of total risk (9.2% and 8.2%, respectively). Firms which exclusively use the dividend payout channel or combine repurchase and dividend pay outs exhibit smaller total risk (5.1% and 4.8%, respectively). A similar associative pattern is reported in respect to aggregate systematic risk, SRISK, and idiosyncratic risk, IRISK. In panel B of Appendix A1, we report the explanatory variables in the logit model specifications. We winsorize all the variables (including the risks), except for firm age, AGE, and the duration of uninterrupted dividend, DDUR, and repurchase, RDUR, pay outs.

4 Empirical findings

In Table 1, we present the rationale for the method by which we establish the influence of the information content of dividend initiations on firm risks. In panel A we show, consistent with Bartram, Brown and Waller (2013), that firms paying dividends have a mean level of total risk about 44% ($0.039/0.089 \times 100$) lower than firms not paying dividends. We also find a significantly lower aggregate systematic risk associated with dividend payers, and also a significantly lower idiosyncratic risk. In panel B, we show that the difference in risk measures becomes smaller, if one compares the risks of dividend initiating firms relative to non-initiating firms. The latter group consists not only of non-payers, but also of dividend payers and repurchasers.

[Please insert Table 1 about here.]

In panel C, we omit the confounding repurchasers. Our set of counterfactual firms is the subset of 17,549 firm observations where there is neither a contemporaneous, a subsequent, nor a last two fiscal years pay out of dividends or repurchases. Moreover, the set of initiating firms continues to pay out in the subsequent fiscal year. Using this improved benchmark of dividend initiating firms' counterfactuals, we show that total, aggregate systematic and idiosyncratic risks are still significantly smaller for dividend initiators.

In panel D, we measure the changes in risks of dividend initiators from year t-2 until year t+1, where t is the fiscal year of the dividend initiation, and compare them with the changes in risks of the counterfactual firms. Possibly due to the maturation of the firms over time, the firm risks reduce. The decline in the risks of the dividend initiators, however, is larger. The difference-in-differences method indicates that the reductions of risks of dividend initiators are also significantly greater than the risk reductions of the counterfactual firms.

The difference-in-differences method, however, does not address the issue of whether the initiating firms and the counterfactual firms are comparable in respect to a propensity to initiate. In panel E, we account for observable publicly available information on ten variables, one-digit industry dummies and a quadratic time trend in the propensity scores from which we derive the closest comparable firms that do not initiate. The logistic equation by which we find these comparable counterfactual firms is presented in the "DI" column in Appendix A2. We also report in the Appendix that the Shaikh, Simonsen, Vytlacil, and Yildiz (2009) specification test statistic does not reject the null hypothesis of a correct logistic model specification, which allows matching.

We then allocate to each dividend initiation a weighted value of the change in risk measures for the counterfactual firms, where the change in risk of the counterfactual firms is estimated by local linear regression using the Stata code, psmatch2, of Leuven and Sianesi (2003), while requiring that there is a common support region, setting the bandwidth to 0.02 and using trimming at 5%. Using bootstrapped standard errors shows significant declines in the total, aggregate systematic and idiosyncratic risks of dividend initiators relative to the changes in these risks for the corresponding sets of counterfactual firms (Table 1, panel E). Having corrected for confounding variables (repurchases) and after having matched on the observable covariates, we find support for a larger reductive effect of the cash dividend initiations on firm risks, in comparison to the change of risks on the comparable counterfactual firms. Specifically, after dividend initiations, there is a weekly (annual) 1.2% (8.65%), 0.5% (3.61%) and 1% (7.21%) greater reduction in total, aggregate systematic and idiosyncratic firm risks, respectively. We interpret this as the effect on firm risks of the information content of a dividend initiation.

In Table 2, we use these local linear regression propensity score matching difference-in-differences estimates, to study the influences of the information content of dividend and repurchase initiations and omissions on firm risks. In panel A, we present findings for dividend and repurchase initiations and omissions, consistent with panel E of Table 1. In the remaining panels of Table 2 we present robustness tests. We extend the event window (panel B), study NYSE firms only (panel C), study firms that initiate or omit above median real amounts of pay out (panel D), study the effects of omitting firms with negative income in the fiscal year before omission (panel E) and we use the nearest neighbour matching methodology (panel F). Following Frölich (2004) and Guo and Fraser (2010), we also conduct sensitivity analyses of our estimated treatment effects in respect to different specifications of bandwidths and trimming. These results do not generally materially differ from the results presented in panel A of Table 2.

[Please insert Table 2 about here.]

In panel A, we present findings for dividend and repurchase initiations and omissions. It is evident that neither repurchase initiations nor omissions impart significant information to the capital market which influences firm risks. In contrast, the information content of dividend initiations and omissions impart negative and positive total, aggregate systematic and idiosyncratic risk effects, respectively.

In panel B, we extend the event window (with one additional fiscal year) after the pay out initiation or omission to test if there is evidence of mean reversion of risk changes after the event. As a result, our estimates of the influence of dividend payout initiations and omissions on firm risks (panel A) may overestimate the real effects. Panel B thus shows the difference, from t-2 to t+2, in the changes in risk levels of the initiating and omitting firms with the changes in risk levels of the counterfactual firms. We find that the effects of payout initiations and omissions, across payout channels, on firm total, aggregate systematic and idiosyncratic risks, in the extended time window, are substantively comparable to, albeit slightly smaller than, the findings in panel A.

In panel C, we report the results for the firms listed on the NYSE. Overall, the findings from panel A are confirmed. There are significant total, aggregate systematic and idiosyncratic risk effects for dividend initiations (omissions) but not for repurchase omissions. The exceptions are in respect to the information content of repurchase initiations and omissions, where significant (or marginally significant) effects on total and idiosyncratic risks are reported.

In panel D, following Jones, Gu and Liu (2014) in respect to their study of large dividend initiations, we conduct tests of initiations and omissions in respect to large real pay out amounts (above the median of real pay out amounts) relative to counterfactual firms. In this panel, we find again significant influences on firm risks in respect to both dividend initiations and omissions. In the context of large real payout amounts, we also find a significant positive influence of large repurchase omissions on firm risks. In panel E, we show, for omitting firms with negative net income in the previous year, the estimation of the information content of payout omissions in respect to firm risks. We find results that do not substantively differ from those reported in panel A. In panel F, the basic model is estimated using nearest neighbour matching with no replacement and the results are not found to materially alter for dividends. However, there is evidence of a decline in total and idiosyncratic risks for repurchase initiators.

In Table 3, we report if there are significantly different risk effects between single payout channel initiations and omissions (columns 1 and 2) and different risk effects between different payout channel initiations/omissions (columns 3 and 4), using mean difference in difference-in-differences in risks about payout events. The test results are reported for robustness with respect to a range of scenarios consistent with Table 2.

[Please insert Table 3 about here.]

In column 1, we report, across panels A to F, that there is no significant difference between absolute risk effects after dividend initiations and omissions. In column 2, we report that there is also no difference in absolute risk effects after repurchase initiations and omissions. The main implication of these results is that the well-known value effect asymmetry after payout initiations and omissions cannot be entirely explained by changes in firm risks. Turning to column 3 (4), we show that the differences in risks after initiations (omissions) between payout channels is generally significant. This finding suggests that repurchases and dividends are not substitutes. Their risk effects are not comparable. The findings are substantively similar across panels A:F. As noteworthy exceptions, the aggregate systematic risk effect after dividend and repurchase omissions does not appear to significantly differ in respect to an extended event window (panel B) and NYSE firms (panel C). In respect to NYSE firms (panel C), total and idiosyncratic risk effects also do not significantly differ across dividend and repurchase initiations (omissions).

5 Conclusion

Firm payout initiations and omissions impart value effects either as inadvertent manifestations of these payout decisions or as deliberate payout signals provided by management. Such value effects may be caused by changes in risk and it is therefore not surprising that Brav, Graham, Harvey and Michaely (2005) find that many managers believe that there is a causal relation between pay outs and risk changes. We study the influence of the information content of payout initiations and omissions on total and idiosyncratic risks as well as on aggregate systematic risk, which includes the market, the Small Minus Big and the High Minus Low risk factor measures of Fama and French (1993). This influence is estimated through difference-in-differences obtained by local linear regression after propensity score matching (Heckman, Ichimura and Todd 1998 and Guo and Fraser, 2010), informed by publicly available information and in line with the semi-strong form of the efficient market hypothesis (Fama, 1970).

One major finding is that the information contents of dividend and repurchase initiations (omissions) differ. Dividend initiations (omissions), consistent with the life-cycle maturity hypothesis, reduce (increase) firm total, aggregate systematic and idiosyncratic risks, while the initiation (omission) of share repurchases generally does not. This supports the idea that risk averse managers are reluctant to omit dividends (Lintner, 1956), but that this is not necessarily the case for omitting repurchases. Furthermore, this finding weakens the case for analysing total pay outs (Skinner, 2008), as it is necessary to distinguish dividends and repurchases concerning risk effects.

Therefore, in corroboration with findings in Grullon, Michaely, and Swaminathan (2002) in respect to dividend payout changes, but unlike Bulan, Subramanian and Tanlu (2007), we find that the aggregate systematic risk of a firm is influenced by the information content of dividend initiations. We also find that idiosyncratic and total risks are influenced by dividend initiations and omissions. Our findings do not generally change in respect to extended payout event windows, a study of NYSE firms in isolation, large payout initiations and omissions when firms make losses. As far as risk is concerned, changes in systematic and idiosyncratic risks after dividend initiations (omissions), can be considered as a potential cause of a change in firm value. Generally, we do not find risk effects after repurchase initiations or omissions. The insignificant aggregate systematic risk effects of repurchase initiations and omissions in the majority of cases are inconsistent with the findings of Grullon and Michaelly (2004). However, noteworthy exceptions include total and idiosyncratic risk decreases after NYSE firm repurchase initiations and idiosyncratic risk increases after NYSE repurchase omissions. Furthermore, after repurchase omissions by large real amounts, total, aggregate systematic and idiosyncratic risks increase.

Extensions of the present paper may prove insightful. For instance, it may be worthwhile to explore the influences on firm risks if the alternative payout type is concurrently used or if one type of payout replaces the other. In addition, a pay out switch from no pay out to a simultaneous initiation of both payout types may be investigated. This is an interesting avenue of future research as a combination of both payout types is now prevalent in practice (Renneboog and Trojanowski, 2011). Furthermore, given the well-documented asymmetry of value effects across dividend initiations and omissions and the symmetric risk effects documented in this paper, it would be especially interesting to study value and cash flow effects using the adopted local linear regression propensity score matching difference-in-differences methodology. Finally, as we show that dividend payout initiations and omissions strongly influence idiosyncratic risks, future research might be able to assess the extent to which the payout related value effects are also influenced by the changes in this type of risk.

References

Abadie, A., Imbens, G.W., 2006. Large sample properties of matching estimators for average treatment effects. Econometrica 74, 235-267.

Bartram, S.M., Brown, G., Waller, W., 2013. How important is financial risk? Journal of Financial and Quantitative Analysis, *forthcoming*.

Berk, J.B., Green, R.C., Naik, V., 1999. Optimal investment, growth options, and security returns. Journal of Finance 54, 1553-1607.

Bhargava, A., 2010. An econometric analysis of dividends and share repurchases by U.S. firms. Journal of the Royal Statistical Society: Series A 173, 631-656.

Bhargava, A., 2014. Dividend payments and share repurchases of U.S. firms: An econometric approach. In: Lee, C-F., Lee, J.C. (Eds.), Handbook of Financial Econometrics and Statistics, Springer.

Blundell, R., Costa-Dias, M., 2000. Evaluation methods for non-experimental data. Fiscal Studies 21, 427-468.

Bonaimé, A.A, 2012. Repurchases, reputation, and returns. Journal of Financial and Quantitative Analysis 47, 469-491.

Brav, A., Graham, J.R., Harvey, C.R., Michaely, R., 2005. Payout policy in the 21^{st} century. Journal of Financial Economics 77, 483-527.

Brockman, P., Unlu, E., 2009. Dividend policy, creditor rights and the agency costs of debt. Journal of Financial Economics 92, 276-299.

Bulan,L., Subramanian,N., Tanlu,L., 2007. On the timing of dividend initiations. Financial Management 36, 31-65.

Chabé-Ferret, S., 2012. Matching vs differencing when estimating treatment effects with panel data: The example of the effect of job training programs on earnings. TSE Working Paper No. 12-356, Toulouse School of Economics.

Charitou, A., Lambertides, N., Theodoulou, G., 2011. Dividend increases and initiations and default risk in equity returns. Journal of Financial and Quantitative Analysis 46, 1521-1543.

Chay, J.B., Suh, J., 2009. Payout policy and cash-flow uncertainty. Journal of Financial Economics 93, 88-107.

Christie, W.G., 1994. Are dividend omissions truly the cruelest cut of all? Journal of Financial and Quantitative Analysis 29, 459-480.

Fama, E.F., 1970. Efficient capital markets: A review of theory and empirical work. Journal of Finance 25, 383-417.

Fama, E.F., French, K.R., 1993. Common risk factors in the returns on stocks and bonds. Journal of Financial Economics 56, 3-56.

Fama, E.F., French, K.R., 2001. Disappearing dividends: Changing characteristics or lower propensity to pay? Journal of Financial Economics 60, 3-43.

Frölich, M., 2004. Finite-sample properties of propensity-score matching and weighting estimators. The Review of Economics and Statistics 86, 77-90.

Grullon, G., Michaely, R., 2004. The information content of share repurchase programs. Journal of Finance 59, 651-680.

Grullon, G., Michaely, R., Swaminathan, B., 2002. Are dividend changes a sign of firm maturity? The Journal of Business 75, 387-424.

Guo, S., Fraser, M.W., 2010. Propensity score analysis: Statistical methods and applications. Advanced Quantitative Techniques in the Social Sciences Series 11, Sage Publication.

Heckman, J.J., Ichimura, H., Todd, P.E., 1998, Matching as an econometric evaluation estimator. Review of Economic Studies 65, 261-294.

Heckman, J.J., Ichimura, H., Smith, J., Todd, P.E., 1998, Characterising selection bias using experimental data. Econometrica 66, 1017-1099.

Hoberg, G., Prabhala, N.R., 2008. Disappearing dividends, catering, and risk. Review of Financial Studies 22, 79-116.

Ikenberry, D., Lakonishok, J., Vermaelen, T., 1995. Market underreaction to open market share repurchases. Journal of Financial Economics 39, 181-208.

Jagannathan, M., Stephens, C.P., Weisbach, M.S., 2000. Financial flexibility and the choice between dividends and stock repurchases. Journal of Financial Economics 57, 355-384.

Jones, J.S., Gu, J., Liu, P., 2014. Do dividend initiations signal a reduction in risk? Evidence from the option market. Review of Quantitative Finance and Accounting 42, 143-158.

Julio, B., Ikenberry, D., 2004. Reappearing dividends. Journal of Applied Corporate Finance 16, 89-100.

Leuven, E., Sianesi, B., 2003. PSMATCH2: Stata module. (Revised version of 2012-07-19). Available via Internet: `/http://ideas.repec.org/c/boc/bocode/s432001.htmls`.

Lintner, J., 1956. Distribution of incomes of corporations among dividends, retained earnings, and taxes. The American Economic Review 46, 97-113.

Michaely, R., Thaler, R.H., Womack, K.L., 1995. Price reactions to dividend initiations and omissions: Overreaction or drift? Journal of Finance 50, 573-608.

Renneboog, L., Trojanowski, G., 2011. Patterns in payout policy and payout channel choice. Journal of Banking and Finance 35, 1477-1490.

Rosenbaum, P.R., Rubin, D.B., 1983. The central role of the propensity score in observational studies for causal effects. Biometrika 70, 41-55.

Shaikh, A.M., Simonsen, M., Vytlacil, E.J., Yildiz, N., 2009. A specification test for the propensity score using its distribution conditional on participation. Journal of Econometrics 151, 33-46.

Skinner, D.J., 2008. The evolving relation between earnings, dividends, and stock repurchases. Journal of Financial Economics 87, 582-609.

Table 1 The rationale to establish the influence of NYSE and NASDAQ dividend initiations on firm risks, 1972-2012

	Observations	TRISK	SRISK	IRISK
Panel A: Differences in firm risks of dividend paying firms versus firms that do not pay dividends				
Non payer	45,778	0.089	0.035	0.080
Payer	31,243	0.050	0.024	0.043
Difference		-0.039	-0.011	-0.037
P-value		0.000	0.000	0.000
Panel B: Differences in firm risks of dividend initiating firms versus firms that do not initiate dividends				
Non initiator	75,454	0.074	0.031	0.065
Initiator	1,567	0.067	0.029	0.058
Difference		-0.007	-0.002	-0.007
P-value		0.000	0.011	0.000
Panel C: Differences in firm risks of dividend initiating firms (D=1 & FD=1) versus firms that do not initiate dividends (D=0 & FD=0), with an additional screen: LLD=0 & LD=0 & LLR=0 & LR=0 & R=0 & FR=0				
Non initiator	17,549	0.091	0.036	0.081
Initiator	407	0.064	0.029	0.056
Difference		-0.026	-0.007	-0.025
P-value		0.000	0.000	0.000
	Observations	DTRISK	DSRISK	DIRISK
Panel D: Differences in firm risk changes between fiscal years t-2 and t+1 for dividend initiating firms (D=1 & FD=1) versus firms that do not initiate dividends (D=0 & FD=0), with an additional screen: LLD=0 & LD=0 & LLR=0 & LR=0 & R=0 & FR=0				
Non initiator	14,818	-0.003	-0.001	-0.003
Initiator	361	-0.013	-0.005	-0.012
Difference		-0.010	-0.004	-0.009
P-value		0.000	0.000	0.000
Panel E: Differences in firm risk changes between fiscal years t-2 and t+1 for dividend initiating firms (D=1 & FD=1) versus firms that do not initiate dividends (D=0 & FD=0), with an additional screen: LLD=0 & LD=0 & LLR=0 & LR=0 & R=0 & FR=0 and local linear regression matching based on ten observed variables, a quadratic time trend and one digit industry dummies				
Non initiator	14,711	-0.002	-0.000	-0.002
Initiator	339	-0.015	-0.006	-0.013
Difference		-0.012	-0.005	-0.010
P-value (bootstrapped)		0.000	0.000	0.000

The (twice) lagged fiscal year is indicated with an ‘L’ (‘LL’). The lead fiscal year is indicated with an ‘F’. Share repurchases (dividends) are indicated with an ‘R’ (‘D’). If the risk variables are preceded by the letter ‘D’, the differences in the risk measures between fiscal year t-2 and t+1 are presented, where t refers to the year in which the firm initiates dividends.

Table 2 Difference-in-differences effects of NYSE and NASDAQ payout initiations and omissions after propensity score matching, 1972-2012

	Column 1 Dividend initiation		Column 2 Repurchase initiation		Column 3 Dividend omission		Column 4 Repurchase omission	
	DID	P > z	DID	P > z	DID	P > z	DID	P > z
Panel A: Basic model (LLR)								
TRISK	-0.012	0.000	-0.001	0.531	0.017	0.000	0.003	0.200
SRISK	-0.005	0.000	0.000	0.883	0.006	0.000	0.002	0.161
IRISK	-0.010	0.000	-0.001	0.502	0.015	0.000	0.002	0.239
Panel B: Extended event window t-2 until t+2 (LLR)								
TRISK	-0.010	0.000	0.000	0.826	0.012	0.000	0.000	0.847
SRISK	-0.004	0.000	0.001	0.543	0.003	0.035	0.001	0.388
IRISK	-0.008	0.000	0.000	0.853	0.012	0.000	-0.000	0.985
Panel C: NYSE firms (LLR)								
TRISK	-0.014	0.000	-0.006	0.039	0.014	0.000	0.007	0.054
SRISK	-0.007	0.003	-0.001	0.567	0.006	0.005	0.001	0.497
IRISK	-0.011	0.000	-0.006	0.022	0.013	0.000	0.006	0.039
Panel D: Large real amounts involved in the payout initiation or omission versus firms that do not change their policy (LLR)								
TRISK	-0.015	0.000	-0.002	0.218	0.020	0.000	0.008	0.010
SRISK	-0.008	0.000	-0.001	0.455	0.011	0.000	0.005	0.004
IRISK	-0.012	0.000	-0.002	0.265	0.017	0.000	0.006	0.030
Panel E: Basic model, but dividend and repurchase omissions measured for firms with negative lagged income (LLR)								
TRISK	-0.012	0.000	-0.001	0.531	0.013	0.000	-0.001	0.770
SRISK	-0.005	0.000	0.000	0.883	0.006	0.001	-0.002	0.448
IRISK	-0.010	0.000	-0.001	0.502	0.012	0.000	-0.000	0.908
Panel F: Basic model with one nearest neighbour (NN) matching and no replacement								
TRISK	-0.013	0.000	-0.005	0.021	0.019	0.000	0.004	0.156
SRISK	-0.006	0.000	-0.001	0.610	0.008	0.000	0.002	0.129
IRISK	-0.011	0.000	-0.005	0.009	0.017	0.000	0.003	0.184

The local linear regression (LLR) matching methodology is used in panels A:E and the nearest neighbour (NN) matching methodology is used in panel F.

Table 3 Comparison of the different NYSE and NASDAQ risk effects between single payout channel initiations and omissions and between different payout channel initiations and omissions, 1972-2012

	Column 1		Column 2		Column 3		Column 4	
	- DI - DO		- RI - RO		DI - RI		DO - RO	
	DDD	P > z	DDD	P > z	DDD	P > z	DDD	P > z
Panel A: Basic model								
TRISK	-0.004	0.225	-0.002	0.502	-0.011	0.000	0.014	0.000
SRISK	-0.000	0.770	-0.002	0.223	-0.006	0.000	0.004	0.035
IRISK	-0.005	0.112	-0.001	0.587	-0.009	0.000	0.013	0.000
Panel B: Extended event window t-2 until t+2								
TRISK	-0.003	0.357	-0.001	0.774	-0.010	0.000	0.012	0.001
SRISK	0.001	0.658	-0.002	0.294	-0.005	0.001	0.002	0.217
IRISK	-0.004	0.133	-0.000	0.927	-0.008	0.000	0.012	0.000
Panel C: NYSE firms								
TRISK	-0.000	0.924	-0.001	0.900	-0.007	0.071	0.007	0.128
SRISK	0.001	0.736	-0.000	0.887	-0.006	0.054	0.004	0.153
IRISK	-0.002	0.654	-0.000	0.905	-0.005	0.157	0.006	0.150
Panel D: Large real amounts involved in the payout initiation or omission versus firms that do not change their payout policy								
TRISK	-0.005	0.222	-0.005	0.129	-0.013	0.000	0.012	0.004
SRISK	-0.003	0.277	-0.004	0.052	-0.007	0.000	0.005	0.048
IRISK	-0.004	0.194	-0.004	0.207	-0.010	0.000	0.011	0.004
Panel E: Basic model, but dividend and repurchase omissions measured for firms with negative lagged income								
TRISK	-0.001	0.772	0.002	0.619	-0.011	0.000	0.015	0.005
SRISK	-0.001	0.770	0.002	0.517	-0.006	0.000	0.008	0.006
IRISK	-0.001	0.696	0.001	0.729	-0.009	0.000	0.012	0.011
Panel F: Basic model with one nearest neighbour (NN) matching and no replacement								
TRISK	-0.006	0.126	0.001	0.713	-0.009	0.011	0.016	0.000
SRISK	-0.001	0.604	-0.001	0.424	-0.006	0.005	0.006	0.009
IRISK	-0.006	0.064	0.002	0.553	-0.006	0.041	0.014	0.000

The difference in the difference-in-differences, DDD, in respect to risk effects, between single payout channel initiations and omissions (columns 1 and 2) and the DDD between different payout channel initiations and omissions (columns 3 and 4) are reported. The absolute value of the initiation risk effects is used in columns 1 and 2.

Appendix A1 Descriptive statistics of the variables, NYSE and NASDAQ, 1972-2012

Panel A: Means of the weekly risk measures

	Observations	TRISK	SRISK	IRISK
All observations	77,021	0.073	0.031	0.065
D=0, R=0	33,960	0.092	0.036	0.083
D=0, R=1	11,818	0.082	0.033	0.073
D=1, R=0	20,662	0.051	0.025	0.044
D=1, R=1	10,581	0.048	0.024	0.041

Panel B: Descriptive statistics of the variables

	Observations	Mean	SD	Median	Min	Max
TRISK	77,021	0.073	0.040	0.063	0.020	0.264
SRISK	77,021	0.031	0.019	0.026	0.004	0.118
IRISK	77,021	0.065	0.038	0.055	0.017	0.250
LNTA	77,021	5.267	1.910	5.111	1.198	10.697
RETE	76,891	-0.443	5.256	0.479	-47.476	22.586
NITA	77,018	-0.025	0.252	0.040	-1.830	0.305
DATA	77,021	0.126	0.388	0.065	-0.623	2.946
MTB	76,695	2.461	4.427	1.654	-20.579	36.325
LTDTA	76,843	0.173	0.182	0.130	0.000	0.964
CATA	77,019	0.167	0.202	0.081	0.000	0.932
SDNITA	77,018	0.080	0.148	0.031	0.001	1.207
AGE	77,021	12.928	10.236	10.000	2.000	52.000
DDUR	77,021	4.132	7.575	0.000	0.000	41.000
RDUR	77,021	0.984	2.260	0.000	0.000	31.000

Panel A presents the weekly risk measures for different payout regimes, with D (R) representing dividend (repurchase) dummies. Panel B presents the following: the natural log of total assets, LNTA. Retained earnings to total equity, RETE. Net income to total assets, NITA. The relative change in total assets, DATA. The market to book ration of equity, MTB. Long-term debt to total assets, LTDTA. Cash holding and equivalent to total assets, CATA. The standard deviation of the ratio of net income to total assets for a period of three years, including the current year, SDNITA. These variables are winsorized at 0.5% above and below. The age of the firm, AGE, is the year of observation minus the year of initial public offering. DDUR (RDUR) is the duration that a firm pays dividend (repurchases) including the year of initiation.

Appendix A2 Logit regressions for the propensity to initiate or omit a payout policy, NYSE and NASDAQ, 1972-2012

	DI		RI		DO		RO		DO Lagged NITA < 0	
	Coef.	P > z	Coef.	P > z	Coef.	P > z	Coef.	P > z	Coef.	P > z
TRISK	-9.585	0.000	-0.565	0.557	25.827	0.000	3.884	0.001	29.625	0.000
LNTA	0.127	0.002	0.129	0.000	-0.311	0.000	0.019	0.551	-0.282	0.000
RETE	0.014	0.588	0.028	0.006	-0.075	0.240	-0.011	0.229	-0.027	0.714
NITA	7.102	0.000	1.096	0.000	-14.851	0.000	-0.396	0.087	-7.315	0.000
DATA	-0.883	0.000	0.133	0.040	0.004	0.985	-0.136	0.236	0.123	0.739
MTB	-0.035	0.089	-0.005	0.507	-0.051	0.075	-0.020	0.067	-0.029	0.443
LTDTA	-0.866	0.020	-0.146	0.435	2.786	0.000	0.230	0.339	1.392	0.021
CATA	-0.378	0.281	0.072	0.668	-0.665	0.313	-0.046	0.846	-2.202	0.033
SDNITA	-1.775	0.027	-0.261	0.368	3.045	0.046	-0.080	0.819	-5.174	0.115
AGE	0.021	0.001	0.003	0.575	0.013	0.179	-0.003	0.613	0.004	0.729
T1	-0.300	0.000	0.004	0.867	0.166	0.000	0.021	0.521	0.041	0.466
T2	0.004	0.000	0.000	0.386	-0.002	0.000	-0.001	0.066	-0.001	0.202
PAYOUT DURATION					-0.052	0.000	-0.107	0.000	-0.047	0.009
CONSTANT	2.297	0.000	-3.102	0.000	-5.593	0.000	-0.978	0.112	-1.233	0.215
Observations	17,956		18,663		10,879		4,258		905	
Pseudo R^2	0.155		0.030		0.330		0.042		0.225	
Chi-squared test	602.80	0.000	251.45	0.000	1057.96	0.000	165.23	0.000	241.31	0.000
Payout events	407		1114		334		668		232	
Specification test	-0.532	0.703	-0.121	0.548	12.501	0.000	0.761	0.223	-1.007	0.843

DI (RI) are dividend (repurchase) initiators. DO (RO) are dividend (repurchase) omitters. The alternative payout type is absent in fiscal year t-2, t-1, t and t+1, where t is the fiscal year of initiation or omission. All variables are lagged except firm age, AGE, and payout duration. The logit regression specifications include a quadratic time trend (T1 and T2) and eight 1-digit sic code dummies. The specification test is from Shaikh, Simonsen, Vytlacil and Yildiz (2009).